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Inclusion in an age of mobility

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Learning with mobiles in UK universities is not new and is not novel. It is, in fact, at least 10 years old, well-documented and comparable to activity in universities elsewhere in Western Europe, America and Asia Pacific. Continued and dramatic changes in the ownership, access and expectations of mobiles amongst university students and equally across UK society have suddenly propelled learning with mobiles to centre-stage as a feasible proposition but, it is now argued, only if students can bring-your-own-device. This has already catalysed discussion about authority, agency and control within university settings but the equally significant and profound implications for the inclusion agenda have not been articulated. This paper begins that process. A theoretical framework for social inclusion in this context is considered, identified and discussed. The paper reviews the progress and problems of the substantial and unique programme of mobile learning across UK higher education since 2000 in relation to its stance on inclusion, where this is apparent. These are all well-documented in academic and official sources; the paper does however also draw on the author's involvement in many of the events and initiatives. The paper raises however significant questions about this programme's meaning and direction in a world where now there is more, better, cheaper, faster, newer but different digital technology in the hands of students, potential students and everyone else than there is routinely in the educational institutions themselves. This digital technology, mobile technology, now allows learners to create, own, transform, discuss, discard, share, store and broadcast ideas, opinions, images and information, and to create and transform identities and communities. The paper argues that this *epistemological revolution* may mean that universities and colleges are no longer credible and authoritative gatekeepers to knowledge and its technologies and so the meaning and relevance of *inclusion* are much less clear. The paper proposes a new stance on inclusion.

Keywords: mobility; inclusion; mobile learning; participation; bring-your-own-device

Introduction

In order to understand the case to be articulated, we first need to put it into the recent historical context of the UK higher education policy agenda. Through the 1990s, this was characterised by trends, pressures and policies that included *inclusion*, *widening participation* and *increased opportunity* as part of the educational, economic and social policies of centre-left administrations in the UK, and elsewhere in Europe (documented, contextualised and critiqued in Blanden and Machin 2004; Macdonald and Stratta 2001; Osborne 2003). We are discussing *inclusion* in UK higher education

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in the broadest sense, meaning the incorporation within the mainstream of higher education of minority, marginal, disadvantaged or under-represented groups. We should recognise that *inclusion* is now contested and needs redefining and is now generally regarded to be more than simply removing barriers or equivalent to widening participation. Different phrases have been used for these various different constituencies but together they were part of a larger fundamental change: 'the change from an elite to a mass system of higher education occurred in the last decade of the twentieth century in virtually all developed societies' (Schuetze and Slowey 2002: 309). These initiatives had only partial success, with non-traditional students talking of, 'a range of experiences of fitting in and standing out in higher education'. For some this involves combining a sense of belonging in both middle-class higher education and working-class homes, while others only partially absorb a sense of themselves as students' (Reay, Crozier, and Clayton 2010: 107). This discussion of identity runs parallel to any discussions of *digital identity*, for example the characterisation of students along a spectrum from digital residents to digital visitors (Wright *et al.* 2014; White and Le Cornu 2011) and a comparative analysis of these moving targets would be valuable and relevant.

The moves for greater inclusion took place alongside and perhaps inseparable from this move to mass higher education (described in Mayhew, Deer, and Dua 2004), sometimes called the *massification* of higher education (contextualised in Brennan and Naidoo 2008; Guri-Rosenblit, Šebková, and Teichler 2007; Rossi 2010). Throughout this process the assumption, largely unquestioned, seems to have been that these various social groups must be incorporated, assimilated and acculturated into the academy as it was then constituted (discussed from different perspectives in Crossan *et al.* 2003; Greenbank 2007; O'Donnell and Tobbell 2007; Reay, Crozier, and Clayton 2010).

The notion that greater inclusion would lead to greater social equality and economic opportunity has however been challenged. An alternative view is that 'education expansion in a structure defined by unequal access to resources could deepen inequalities' and that 'By expanding higher education without paying attention to the mechanisms by which we expanded, we created a two-tier system where the most disadvantaged students paid the most for the least quality of education' (Tressie McMillan Cottom discussing her analysis of USA, quoted in World University News (WUN 2015: 4) and in the UK, education in many countries is a 'race between competing social groups with unequal resources', 'that actually reproduces the competitive foundation of inequality' (Professor Susan Robertson, quoted in a report tellingly entitled, 'Higher Education is "Part of the Problem of Social Inequality, Not the Solution"' (THE 2015: 8)). Meaning Earlier longitudinal studies show that

> ... HE expansion has not been equally distributed across people from richer and poorer backgrounds. Rather, it has disproportionately benefited children from relatively rich families. Despite the fact that many more children from higher income backgrounds participated in HE before the recent expansion of the system, the expansion acted to widen participation gaps between rich and poor children. (Blanden and Machin 2004: 230)

This was at odds with earlier optimism, or perhaps just reflects confusing data, analysis, outcomes and criteria, so

> ... while these students face numerous and varied barriers to their learning, they are motivated by the impact their studying will have on themselves and their families. Of notable significance is how higher education is perceived to reverberate within the home, promoting a culture of learning among, and encouraging the educational aspirations of, children. (Wainwright and Marandet 2010: 449)

Information and Communications Technology (ICTI) had a role in this process of massification (Selwyn and Gorard 2003). '[T]he acceptance of e-learning throughout the education system was inevitable. The space left for practitioners in Higher Education is either to embrace the new media enthusiastically or to stand aside and watch its inevitable unfolding' (Clegg, Hudson, and Steel 2003: 39). There were however only a few attempts to understand the relationships between ICT, as it was then understood, and the non-traditional students coming into academia (O'Driscoll *et al.* 2010; Jones and Lau 2010) but any analysis and recommendations were framed in terms of helping these students to better adjust to the institutional systems being provided. Coincidentally, Jones and Lau link ICT and widening participation as two major challenges,

> Widening participation has increased in emphasis in Higher Education over recent years. While there has been some progress in making higher education more accessible to students who have traditionally been excluded, widening participation is still being described as one of the major challenges facing Higher Education Institutions. Likewise, technological development has led to an increased use of online learning in Higher Education and this has also challenged educators and their practice. (2010: 405)

One analysis argued that the *massification* of higher education without the disproportionately necessary increased resources to support *non-traditional* students was only possible with the industrialisation of the educational processes that could be delivered by ICT (Traxler 2010a) – this does however problematise the role of mobile learning, given its roots in ICT. Recently, an uncritical focus on *lecture capture* and the *flipped classroom* (THE 2016) may be having the accidental side-effect of making the establishment of the identity *student* amongst non-traditional entrants more difficult and may ignore some of emotional, social and cultural reasons that brings students onto a campus.

The growing use of open and distance learning formats also formed part of the same set of initiatives. Reaching into the community using open and distance learning formats did, on the one hand, facilitate the inclusion of disadvantaged groups within the existing bounds of the academy, but it did, on the other hand, have only mixed success in terms of reaching and including non-traditional communities (Tonks and Farr 2003).

Our purpose here is to explore the impact of widespread popular ownership of personal mobile digital technologies in the following decade on these formulations of *inclusion*. We must however now look at the evolution of ICT across the same decade. This is outlined in various more-or-less contemporary sources (Conole 2002; Harasim 2006; Jenkins, Walker, and Voce 2014; Nicholson 2007; Somekh 2000). It was an era still characterised, because of history, cost and expertise, of ICT being an institutional, mostly centralised, phenomenon, not a dispersed personal or social one. This was true of the networked desktop computers and of the software that ran on them, mostly virtual learning environments of varying capacity and sophistication (Benfield, Roberts, and Francis 2006; Conole and Oliver 2006; Mayes and de Freitas 2004;

O'Neill, Singh, and O'Donoghue 2004). One judgement was that, globally, 'Conventional institutions of learning have changed far more slowly than the modes of inventive, collaborative, participatory learning offered by the Internet and an array of contemporary mobile technologies' (Davidson, Goldberg, and Jones 2010: 3) and certainly non-PC/post-PC technologies were a challenge to how universities procured, delivered and supported IT services at a time of shrinking resources (Jenkins *et al.* 2011).

At some point, *technology enhanced learning* emerged as a more ostensibly scientific and research-focussed term (Kirkwood and Price 2014; Walker, Voce, and Jenkins 2013) and its implications for inclusion were considered (Bell, Neary, and Stevenson 2009) but at this point e-learning as an institutional phenomenon across the sector had crystallised and solidified as Virtual Learning Environment (VLEs) functioned largely as repositories and bulletin boards. There is an argument that these repositories house the institutional IP, accessible only through a pay-wall, an integral part of the institutional business model and the antithesis of inclusion based around open learning, the digital analogue of the secure campus.

Looking backward − mobile learning in higher education

Meanwhile, popular mobile technologies were changing the nature of communication and content delivery in many industries and in many countries, often dramatically. This dated back to the turn of the century. In education it led to the idea of *mobile learning*, back to the EU's flagship *MOBIlearn* and *m-learning* projects starting in 2002, followed over the succeeding decade by hundreds of pilots and projects in schools, colleges, universities and communities in many different parts of the world (Kukulska-Hulme *et al.* 2011; Traxler 2013).

This idea and indeed much of the research in using mobile devices for learning, mobile learning or *m-learning* as it became known briefly, is about 15 years old. The first *mLearn* conference, held in 2002 was a landmark. In the intervening decade, mobile learning research projects, driven by exploration of educational theory and exploitation of each new technology, have shown how mobile technologies can motivate engage and enthuse learners, often the most disengaged; can challenge existing educational thinking; can extend the reach of learning to individuals and communities that were previously too difficult or expensive to reach and can enrich and enhance the experience of learning (Traxler 2013). Through this time the definition of mobile learning was the subject of considerable debate. The early and obvious definitions focussed on mobile technologies as the defining characteristic but later and more thoughtful definitions focussed on the mobility of the learner and of the learning, specifically on its capacity to cross contexts, from for example home to school, formal to informal and field-trip to lecture theatre (El-Hussein and Cronje 2010; Laouris and Eteokleous 2005; Park 2011). Throughout this first decade, the projects revolved however around mobile technologies, around implementations and deployment that were relatively expensive, fragile, formal, small-scale, short-term, institutional and subsidised, taking place in a benign albeit deceptive and deteriorating, global economic climate (Eaton *et al*. 2011; Imbs 2010). This debate, expressing how mobile learning was conceptualised, is important for our discussion of inclusion.

These mobile technologies were increasingly advanced and engaging but never became fully and formally integrated into higher education, despite the massive potential. Generally, and unlike other educational ICTs, for example PCs, data

projectors or TVs, they are personal, cheap and found at the bottom-of-the-pyramid in socio-economic terms. These are two reasons for asserting that mobile technologies have a massive educational potential (Winters 2013).

These projects grew out of the ideas and lexicon of *innovation*, for example, *early adopters*, *critical mass* and *change agents*, that were popular at the time; they were often funded as developmental projects, intended to become established within institutions by a process of downward and outward diffusion and intended to become embedded and mainstreamed (Rogers 2010). This may or may not have happened but generally, the finances and culture were against them (Coverdale-Jones 2012; Romiszowski 2004; Russell 2009; Salmon 2005; Sharpe, Benfield, and Francis 2006; White 2007). The finances were against them because the innovation looked like an extra direct cost for an un-quantified benefit and the culture was against them because innovators were driven by very different ideals and objectives compared to mainstream lecturers, their managers and their quality assurance regimes (Sharpe *et al.* 2005). The evidence was not always convincing or apparent but the extra costs were (Traxler and Kukulska-Hulme 2006) and subsequently policy changes reduced the earlier access to funds for innovation (Tonkiss and Dommett 2013). Therefore, most mobile learning projects from this era never got beyond a pilot phase and researchers moved on from one innovation to the next innovation, in a parallel universe of research funding (Ng and Cumming 2015).

It was probably the case in the UK that the agencies funding and supporting mobile learning innovation, deployment, evaluation and dissemination, mainly Becta (originally the British Educational Communications and Technology Agency, then just Becta, closed in 2011), Jisc (originally the Joint Information Services Committee, www.jisc.ac.uk, now just Jisc) and perhaps the Higher Education Academy (HEA) Subject Centres never had the resources, priorities or confidence to create enough projects across their respective sectors and disciplines to achieve a critical mass and sustaining community. It was also the case that to some extent the funding agencies moved on from the mind-set of innovation, preferring to addressing change at a more systemic and institutional level, leaving mobile learning in a limbo.

These projects were usually funded across a year or two, with a handful of staff, the enthusiasts and visionaries, alongside rather than inside the core assessed curriculum, and all these features militated against an embedded sustainable future. Hardware, that is mobiles or earlier Personal Digital Assistant (PDAs), was usually built into the budget. It guaranteed a uniform and consistent platform and experience, removed a confounding variable and reduced technical problems. It also limited the size of any sample and produced no exit strategy. It had no sustainability in terms of finance or culture.

Latterly, the mobile-specific initiatives merged with educational exploration of other popular digital technologies such as podcasts, micro-blogging and social networks but by this time the national funding environment both for innovation and for subsequent embedding had become distinctly bleak (Traxler 2016).

Looking back, one brief exception to this account might be the MoLeNET programme of the Learning and Skills Network (LSN, closed in 2011), putting mobile learning hardware and infrastructure into the further education sector from 2007 to 2010. This grew out of the EU project, *m-learning* – one that specifically addressed mobile technology and inclusion (Attewell and Savill-Smith 2004) – and various smaller successor projects that built capacity and credibility within LSDA and its funders, and meant that LSN (the successor in 2006 to the Learning and

Skills Development Agency, the LSDA) could grasp the opportunity of Learning and Skills Council (LSC) funding when it became available. This was not however a direct consequence of evidence and evaluation, more of a certain local climate and specific relationships. By the same token, the programme, funded on a year-by-year basis for 3 years to the eventual tune of £14 m, was not explicitly tasked with producing further evidence nor did it prioritise external evaluation. (In fact the dispersed and heterogeneous nature of the projects compounded any difficulties with evaluation as did the programmes rather general objectives.) This perhaps tells us that pilot projects and their outputs and evidence have not always played the kind of primary role that researchers would imagine, and that change takes place in other ways. The restrictions imposed on the funding by the LSC meant it was not only short-term and un-predictable but also intended only for capital hardware, neither for devices that were essentially disposable nor for their connectivity. This may seem a minor point but illustrates how the procedures of institutional procurement and support have trouble as their focus moves from large stable desktop devices to many small personal ones and is one more hurdle to embedding mobile learning within the established practices of e-learning (Attewell *et al.* 2010; Parker 2010).

The early mobile learning projects also grew out of the e-learning of the time, out of the e-learning community, its aspirations and objectives, and seemed to offer learning anywhere, anytime. Indeed, many early projects attempted to port e-learning systems, for example VLEs, from desktop computers onto mobile phones, whilst others more adventurously tried to incorporate the affordances of mobile phones, for example image-capture or location-awareness, into an e-learning ethos. They also borrowed extensively from the e-learning pedagogy of the time, specifically in the UK the social constructivism expressed in Laurillard's Conversational Framework (Laurillard 2007) stretching what was a conceptualisation of formal learning further into the rapidly evolving, technically-mediated informal.

All of these projects did however work within the confines of the existing institutions and their established curricula, either enriching or enhancing them or extending their reach to people and communities otherwise too difficult or costly to reach, whatever the rhetoric of transformation and paradigm shift (Rajasingham 2011). Subsequent notions of students as *agents of change* (Healey 2012) and *learner-generated content* (Narayan 2011) may be only technical fixes that also ignore the more systemic challenges outlined in the current paper. Time will tell. The end result did however seem be to a pedagogic research movement that somehow had difficulty becoming embedded inside the institutions and thereby achieving its full potential, a set of interesting projects and results but not ones that spoke to the higher education sector as a whole. The reason for this historical account is to identify what differentiates the past from the future (Traxler 2012).

Looking forward – the social trends of mobile technology

In the coming decade the technology of mobiles will continue the trend of becoming more popular, personal, robust, cheap and social. The technology has already become democratic, or rather has become more demotic, in nature and society itself has become mobile and connected. It has become increasingly difficult to imagine everyday life before or without mobile technology as its functionality and capability have increased, as a generation of young people have matured and as network take-up,

competition and coverage have increased to near saturation. This is leading to a new world, with new communities, expectations and behaviour.

There is a rich and growing literature describing the profound and transformative impact of the ownership of mobile technologies on most aspects of our societies and cultures. Significant contributions include Agar (2003), Fortunati (2002), Geser (2004), Goggin (2006), Katz and Aakhus (2002), Kirby (2009), Ling (2004), Ling and Donner (2009), Nyíri (2007), Plant (2002) and Urry (2007), ranging from the empirical and quotidian to the speculative and philosophical. They describe from different perspectives how these technologies transform social, economic, cultural and personal behaviour and change ideas about

- Identity, Community, Relationships
- Ethics, Behaviour & Expectations
- Jobs, Work, Employment, Economy
- Creativity, Self-Expression, Artistic production
- Learning, Understanding, Knowing

The most obvious and the tangible of these is the transformation, at national, organisational and individual levels, of the artefacts, resources, commodities and assets that constitute economic life and the ways that we, as individuals, organisations and nations, produce, consume and exchange them; these technologies also transform the nature of much work itself by facilitating remote and extended working, out of hours, off the premises, and by supervising and monitoring and potentially deskilling peripatetic and dispersed workers (Dutta 2009). Other obvious transformations are in forms of artistic expression, creating or mutating genres for art, creating new artists and new markets for their work, from blogs and flash mobs to ringtones and downloads (for example, Epstein 2004; Lillie 2012; Senft and Baym 2015), in our spiritual life (Cho and Campbell 2015; Williams and Gray 2010) and in our political life (Hermanns 2008; Miard 2012) as the old sedentary institutions and organisations lose touch with the values and concerns of people growing up in a different world; and to crime and wrong-doing from BlackBerry-enabled rioters to trolling, sexting, happy-slapping, blue-jacking and cyber-sex (Traxler 2009). This short account clearly abbreviates and exaggerates something far more complex and subtle but the points are nevertheless relevant to our discussion. The implications for education are manifold. Even if the role of education is only to service the economy, the nature of that economy is changing rapidly, in ways in which the static institutions of education might be ill suited to monitor. Another role for education is to address exclusion and disadvantage and we shall see how these too might become transformed in a mobile and connected society.

Not only are the facts of a mobile and connected society important for education but so are its fictions, the moral panics that cite mobile technologies as the cause of students who stay in bed, the decline in literacy, the deterioration in manners and the rise of the couch potato (Coleman 2010). Educators sadly must view and review their mobile learning innovations in this light.

There are also many accounts of how mobility and connection change how we think of ourselves, our identities, our affiliations, our relationships; nowadays many people have multiple on-line identities, sometimes even within the same cyber-space domain and sometimes different genders. These are not merely their real identities and personalities enacted on-line – any more than their avatar in SecondLife is merely

a collection of pixels – nor are they somehow less real than the real ones, not a sort of online fancy-dress or impersonation but are actually and obviously authentic, locations where emotions and values are established and transformed (see for example, Stald 2008). The implications for education are the transience, fragmentation and complication of the identities and communities being served, potentially changing the ideas of out-reach and recruitment as people shift the places and spaces that they inhabit (Childs 2010). A different facet is the extent to which mobiles are embodied or prosthetic, part of us, inseparable, an umbilical cord to much that we now value, the last thing at night, the first thing in the morning; organisations expecting to separate people from their mobiles threaten these attachments (Pertierra 2005; Rettie 2005; Vincent 2006), though they also represent yet another technology of surveillance (Kietzmann and Angell 2010).

These changes drive further changes in expectations about behaviour, about what is good, acceptable, appropriate and okay in our interactions, our relationships, our conversations; our ideas about what is correct, ethical. This happens as the mobile phone intrudes more and more into everyday life and as the mobile phone is increasingly the portal to online content, activities and communities. What defines and characterises a community is a shared consensus about ethics and expectation. What is acceptable as a gesture, an interaction or a topic in one community is not necessarily so in another, and online communities as opposed to physical communities are much more volatile and tacit – offense is easily given in the wrong place and educators find themselves venturing into the equivalent of foreign countries with strange customs and traditions when they take or seek students in cyberspace (Farrow 2011; Traxler 2011). The mobile phone is also becoming an essential component or presence of every face-to-face social and inter-personal interaction, in the café, the conference, the classroom and the concert, the street corner, the bus and the pub, and these interactions change and the rules evolve, quickly or slowly, willingly or unwillingly, consensually or conflictedly. Educators must work with and within a society where the private and social online spaces of music, community and inter-action intrude to the physical and educational spaces and where for example phone calls interrupt conversations, classes and concerts (Katz and Aakhus 2002).

Joining or creating communities, online or otherwise, means acceding to a set of expectations about how to behave and how to interact; in the online world, these communities are fragmentary, transient and complex, accessible more to those digital native learners than many of their digital immigrant teachers, if we may use such a flimsy generalisation.

Connected universal mobile devices, the portal onto web2.0 services, also change the nature of learning and knowing. Everyone with a smartphone and a network can generate, store, share, discuss and consume images, ideas, information and opinions, can access the cloud, and the services it provides, and can access each other; they can pursue, sustain or invent interests specific to them, their location, their community and their history.

We could appropriate the phrase *knowledge economy* and use it to stand for the processes and transactions by which knowledge is produced, owned, distributed, stored, reworked, shared and consumed; we are talking now about a move away from a knowledge economy based around specialised knowledge-factories producing durable standardised knowledge to a more local, dispersed, grass-roots cottage-industry producing and distributing more varied knowledge for highly segmented markets.

This is the meaning behind the phrase *epistemological revolution* (Des Bordes and Ferdi 2008).

This sounds like education by another name, but an education without the gatekeepers, barriers and constraints of most schools, colleges and universities, and without the support, standards, structure, stability and incentives of these established institutions. The challenge to education systems is of course the shift or discrepancy in control, authority and agency represented not by the technologies themselves but by the social changes around them. This is perhaps at the heart of notions that mobile learning is disruptive, not just a nuisance, but profoundly disruptive (Sharples 2002).

We should perhaps point out that we are not making the kind of generational case exemplified by distinctions such as digital native/digital immigrant (Prensky 2010), widely used to understand change amongst students within the university system (Jones 2012).

Looking backwards and forward – the tipping point

This paper is describing the pressure or momentum for sustainable educational innovation with mobiles shifting from top-down, which usually did not happen for financial reasons, to outside-in, where the expectations and attitudes acquired by learners outside the institution, out in real life, were brought into the institution, sometimes uncomfortably and certainly not with any consistency, coherence or homogeneity.

These two brief accounts, looking backwards and looking forwards, allow us to describe the present as a tipping point, one with considerable consequences for the nature of education, especially for the UK and those other countries with widespread and sophisticated take-up of mobiles amongst students.

This has a systemic significance, beyond just the educational technology community. Traditionally the institutions of education, especially universities, have acted as the custodians, enablers, gatekeepers and arbiters of higher learning and latterly also the custodians and gatekeepers to the technologies of learning. These were usually for reasons of cost and complexity beyond the reach of private citizens. If these private citizens want access to learning then they would do so on the terms and technologies specified by the institutions that procured, provided and controlled the technologies of their choice. They did this in order to provide equality and equity of access, experience and opportunity, to guarantee reliable access to resources and transactions of a safe, consistent and acceptable technical and educational standard.

The way forward – bring-your-own-device, … and services

Into this rapidly evolving situation came the idea that many of the resource issues associated with sustainable mobile learning might be solved if educational institutions encouraged learners to bring their own devices. The bring-your-own-device (BYOD) debate, in the form of discussions about learner devices (CoSN 2012; Traxler 2010b) sponsored by Becta, actually goes back several years before its emergence in its present form in the corporate and US domains. It is a debate in several different levels, the obvious and easiest being the financial one. UCISA reports its members, the IT service department of UK universities, feel themselves (UCISA 2008) unable to sustain the current level of IT provision of even the existing IT portfolio – this is problematic in terms of students' expectations even before we

add mobile devices into the equation. Many students will have experience of newer and better computers than those available in their university.

In the USA, where the phrase BYOD has gained most visibility before making its way back to the UK, the acronyms BYOT and BYOS, referring to technologies and services, have also surfaced, drawing our attention to the fact that we cannot separate users' devices from the services such as social networking, micro-blogging, instant messaging, cloud computing, gaming and whatever else they choose to access. The device is the Trojan horse for the services.

There are several local or tactical problems with BYOD. Firstly, the technical and infrastructural challenges, secondly the operational aspects and thirdly, the ethical and political issues. None of these are insurmountable but they may account for the current timidity in the UK – as we implied earlier mobiles are notorious for their capacity to generate moral panics in the media (Goggin 2012).

The first challenges do not intrinsically relate to the ownership of devices, more to their sheer numbers, diversity and unpredictability and to concerns about the capacity of existing staff and infrastructure to cope safely and reliably. These are often resource issues in the sense that they are issues that could be solved by money. We should remember that BYOD might deliver substantial savings by reducing or eliminating the annual hardware replacement requirement and turning IT suites into general teaching rooms. Resources would be transferred to learner advice and support. IT services must shift from managing a limited number of technologies procured by the institution to supporting a potent unlimited number of technologies accessed by learners, many of whom may not be adequately digitally literate, in the sense of understanding the educational potential or the principles behind the technologies they daily use.

The second set of aspects, the operational, is essentially about educational quality and the measures needed to ensure, again irrespective of ownership, that students have an adequate educational experience, equivalent perhaps to that before mobiles were introduced into the blend. These are regulatory issues and cover content, delivery and training.

Mobile device management was much in evidence. Services such as AirWatch[1] offer institutional managers a practical way to ensure their networks can support a wide variety of approved devices and authenticate their users, enabling tracking of what is being done on the networks – when, what and by whom and in detail. These services give the assurance that learners are operating within the agreed norms and that revised codes of acceptable use can be enforced.

The third set of issues, the ethical and political ones, is centred on reconciling (consumer) choice with equality of access to educational experiences and opportunities, and to inclusion and opportunity. With an impersonal institutional technology such as the desktop PC, the expectation was historically that the institution procured, provided and controlled these and the buildings that housed them. Furthermore, provision must recognise how personal and private, indeed intimate, this technology is and the strength of personal preference and attachment.

Any policy must recognise that mobile devices are unlike other ICTs in terms of equity. Equity in this context implies equity of hardware and on-going equity of connectivity. Furthermore, even the early days of mobile learning, research (Traxler and Riordan 2003) showed that providing – giving or lending – students with a university device was providing them with a second and secondary device, one they had not chosen, and it was soon forgotten or discarded. Addressing the equity issue

by the means-tested provision of devices compounds this problem by potentially stigmatising the recipients, the digital equivalent of free school lunches.

If these arguments were in principle plausible, then the next steps would be to look at quick-easy-wins, those changes and initiatives that would save money, increase institutional confidence and pose no risk specific to each institution. Jisc have documented some in their Mobile Learning InfoKit (JISC 2012); one example is increased use of SMS messaging, another is deploying web-based apps for student support, a third might be discussion about changed codes of acceptable use.

So, if we believe that learning with mobiles based on BYOD is potentially sustainable but potentially disruptive, we need to address the likely BYOD scenarios, and the implications in terms of IT support and education support. We must also explore the challenges to leaders, teachers and institutions, the changed nature of acceptable use, and the implications for privacy, etiquette and trust. As we have said, however, this will not merely be a discussion around the devices but also the services that they afford; they are inseparable, learners always bring both. This discussion must however be local to the culture and ethos of each institution, to its history, mission and resources.

Access to university education – the inclusion agenda

We now take the discussion in a different direction and start to explore the ramifications of our analysis for the inclusion agenda described earlier. This in the UK has been a decade-long political project to increase the representation in the national student body of various different categories of people outside the traditional demographics of able-bodied, middle-class, white male school-leavers, a project to represent *non-traditional* students, that is, to represent women, older people, ethnic minorities and those with disabilities.

Increasing inclusion, and participation and access, involved various programmes and initiatives, all predicated on the understanding that learning and the technologies that supported, enhanced and delivered it were the attributes or characteristics of institutions, of the existing institutions, and so inclusion was the process of getting under-represented communities into those institutions and supporting them once they were inside.

Access and inclusion – whom to what

Looking back, what we see could be interpreted as an increasing challenge to the relevance and authority of our educational institutions as they struggle, or do not struggle, to adapt to a world very different from that for which they were designed, even for the economy they were supposed to serve.

This brings us to the critical and novel part of the discussion. We have talked about inclusion and participation from the perspectives of institutions that historically acted as gatekeepers to education and gatekeepers to the technologies of education, essentially facilitating people from outside the institution coming in and partaking of the institution, and undergoing the acculturation and identity transformation implicit in education, alongside the explicit curriculum. They acquired the identity *student* as the way to subsequently acquire the identity *professional person*. Meaning that the process of inclusion was the process of coming on to privileged territory and being assimilated into the culture of its existing inhabitants. There is a risk, in these

discussions, of talking of *the disadvantaged* and perpetuating the language of *othering*. We could however view inclusion (and assimilation into university norms and culture) as being predicated on just such othering, and our current critique of inclusion as an antidote to this.

Some of the literature of participation described it in just these terms, of non-traditional, that is working class, students undergoing a kind of identity transformation – to a greater or lesser extent depending on the prestige and traditions of the institution – as they respond to an implied curriculum expressing the cultural, socio-economic and cognitive norms implicitly defined by institutions to which they seek admission (Hinton-Smith 2012; Measor, Wilcox, and Frame 2012; Reay 2002). We argue that the apparent solidity of these norms is no longer as authoritative or as appropriate at it used to be, and many of the reasons are implicit and intrinsic in our essentially mobile and connected society (Traxler 2008).

Our argument has been that the static and sedentary nature of institutions, and the procedures, their professions and their estates, are becoming increasingly irrelevant and so we must revitalise and re-orient the idea of inclusion and think in future of education being included again in the community rather than hoping to preserve the idea of including the community in education. This is now the challenge, to ask what does inclusion means after the tipping point.

The changed and challenged inclusion agenda

Policies for participation, inclusion and access are drivers for institutional resources and priorities. Our concern is to draw attention to the changed environment in which they operate, though without ignoring or under-stating those aspects of exclusion untouched by the digital and by the novel. Bad housing, unemployment and poor health will always need recognition in resources, policies and priorities.

This paper has a specific agenda amongst the more general discussion of the changing nature of learning with mobiles in UK higher education and that is to argue for a paradigm shift in the inclusion agenda; quite literally a paradigm shift in the terms that Kuhn (2012) would have recognised, requiring the paradigm's centre to move from the institutional environment to the learners' social and cultural environment, to think of inclusion no longer as the inclusion of learners into the institutions but instead to think of inclusion as the inclusion of institutions amongst learners and their communities, recapturing or reinventing institutional relevance, authority and legitimacy. This resonates with Schon's (1973) work on the decline of the stable state, examining the idea of knowledge generation activity at the edge rather than direction from the centre. This is particularly relevant when mobility and social connectedness allow new ways of generating knowledge. He notes that, 'the movement of learning is as much from periphery to periphery, or from periphery to centre, as from centre to periphery' (1973: 165).

Conclusions

To summarise, the capacity of mobile technologies to generate, share, store, access and consume ideas, opinions, information and images, specific to people, locations, communities and their contexts means that they are a quintessential web2.0 technology, challenging the stability and authority of the established educational forms and stakeholders. Previous generations of technology enhanced learning

have exploited expensive, complex institutional systems, such as VLEs, running on institutional hardware, networks and infrastructure, and resonated with ideas of inclusion that involved bringing the excluded, the marginal and the disenfranchised into the institution, to exploit its experts, its expertise and its resources, to learn *from* them. By comparison mobile devices, social networks and other popular digital technologies facilitate the generation, valorisation, transformation, sharing, dissemination and production of the ideas, images and information and the opinions that constitute much of education and its acquisition but taking place outside the institution, its education professionals and outside their control and jurisdiction, challenging the established practices and standards of education and challenging the older notions of inclusion.

There are massive implications for the practice and philosophy of inclusion, participation and access. Education could be transformed in a world where academic institutions and their technologies are no longer the gatekeepers or the arbiters to learning. The sustainable use of popular digital technologies especially mobile devices, depends on BYOD strategies but this significantly alters the dynamics of agency, control and direction within the institutions, within the curricular and within the educational professions.

The implications for policies of inclusion are that these must be re-framed; the institutions, curricular and professions of education must themselves seek inclusion within the changed mobile and connected worlds of the communities, of whatever sort, that they seek to serve. The alternative is local educational versions of an Arab Spring that sweeps away stable and sedentary but sadly irrelevant institutions, organisations, professions and procedures (Traxler 2015). We argue for a shift to a theoretical framework or paradigm for inclusion that puts students and their digital habitus at the centre of inclusion. This is clearly a big challenge since we have characterised this emergent culture and society as fluid, fragmented, partial and subjective and the wider world as teetering on economic, ecological and political crises where the point and purpose of education is no longer clear (Traxler and Lally 2016).

Note

1. See http://www.air-watch.com/solutions/bring-your-own-device-byod/

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